Missouri land reclamation pollinator initiative: Moving habitat conservation forward

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ABSTRACT

Improving pollinator habitat is a critical activity to achieve successful conservation efforts for land, water, and wildlife. The efficacy of enhancing the diversity of pollinator plant assemblages, particularly on abandoned mine lands, are to provide a more diverse and continuous progression of alternative food and shelter sources. Pollinator grouping, structure, and stability depend on various characteristics of the surrounding landscapes and the actual reclamation efforts. Additionally, quantifying the effectiveness of reclamation on habitat enhancement also has challenges due to expense of monitoring, length of time required for systems to recover, and choice in metrics. Therefore, the Missouri Department of Natural Resources-Land Reclamation Program (MDNR-LRP) has facilitated a pollinator-forward reclamation initiative for abandoned mine lands focused on establishing habitats that help reinstate the functional needs of pollinators. The goal of this initiative was to increase the ecological fitness of pollinator species (e.g. butterflies (*Lepidoptera spp.*), bees (*Hymenoptera spp.*), and bats (*Chiroptera spp.*)) by improving the quality, quantity, and connectivity of habitat on landscapes affected by historic mining activities. Specifically, the department focused on employing improved management tactics on sites undergoing reclamation, which included targeted landscape and site-specific forb diversity, broad-scale warm-season grass establishment, and bat cupola construction. Additionally, this initiative proposes a novel approach to systems monitoring using soundscape metrics as a tactic to obtain holistic measures of reclamation progress. This multi-objective approach will provide opportunities to: (i) Contribute to, or modify, existing regional conservation efforts by delineating site-specific areas to propagate plant species on disturbed landscapes, (ii) Expand the contiguity of beneficial habitat using abandoned mine lands, (iii) Support field data collection necessary for developing adaptive management strategies, and (iv) Foster interagency and community collaboration for promoting, protecting, and enjoying natural resources.